Missouri
Department of
Natural Resources

Total Ammonia Nitrogen Criteria Implementation Guidance

Background

Changes to Missouri's Water Quality Standards [10 CSR 20-7.031] were published in the Missouri Code of State Regulations on November 30, 2005. One major revision to the Water Quality Standards (WQS) was the adoption of the U.S. Environmental Protection Agency's "1999 Update of Ambient Water Quality Criteria for Ammonia" (1999 Ammonia Update). The 1999 Ammonia Update contains EPA's most recent freshwater aquatic life criteria for ammonia and supercedes all previous EPA recommended criteria for ammonia. The inclusion of the 1999 Ammonia Update into Missouri's WQS fulfills the state's obligation under 40 CFR 131.20 to review its water quality standards at least once every three (3) years and incorporate new or revised water quality criteria as appropriate.

Intent

The intent of this guidance is to establish a procedure for developing total ammonia nitrogen water quality based effluent limitations (WQBELs) for use in new and renewal state operating permits. This document specifies the process for determining whether WQBELs for ammonia are required (reasonable potential) and how to develop WQBELs for total ammonia nitrogen consistent with the 1999 Ammonia Update and Missouri's WQS.

This guidance does not prohibit establishing alternative methods of analysis or permit limits, provided that the alternatives are technically sound, consistent with Missouri State regulations and this document, and are protective of water quality. Because this guidance document can not encompass all of the situations encountered when developing a facility operating permit, staff are encouraged to contact central office with site specific questions.

Overview – Updated Total Ammonia Nitrogen Criteria

The updated total ammonia nitrogen criteria found in the 1999 Ammonia Update reflect the results of ammonia toxicity research and data collected since the release of EPA's last criteria document in 1984. This more recent research and data indicate acute toxicity is most dependent upon pH and fish species, while chronic toxicity is dependent on pH and temperature. Acute toxicity evaluations must now determine whether Salmonids are present or absent and an appropriate low-flow value for the receiving stream must be calculated (1Q10). Chronic toxicity evaluations must now consider whether early life stages of fish (ELS) are present or absent, an appropriate low-flow value for the receiving stream must be calculated (30Q10), and an appropriate averaging period must be used in the LTA_c calculation (n = 30).

Acute Criteria for Total Ammonia Nitrogen (mg N/L)

- Criteria can be found in Table B1, 10 CSR 20-7.031 and are dependent on fishery type and pH.
- Criteria table divided into Cold-Water fisheries and Cool & Warm-Water Fisheries with criteria covering the range of pH allowed by 10 CSR 20-7.031(4)(E).
- Cold-Water fisheries include all classified waters designated as Cold-Water Fishery (CDF) in Tables C, G and H of 10 CSR 20-7.031 and those waters with salmonids present. Cool & Warm-Water Fisheries include classified waters in 10 CSR 20-7.031 not designated as CDF and those waters with salmonids determined to be absent.
  - Cold-Water Fisheries [*Salmonids present*] includes species of the family Salmonidae (trout) and Cottidae (sculpins)
  - Cool & Warm-Water Fisheries [*Salmonids absent*] includes species of the family Cyprinidae (minnows), Ictaluridae (catfish), Centrarchidae (sunfish), Catostomidae (suckers), Esocidae (pike), Moronidae (basses), Percidae (perches), Acipenseridae (sturgeon), Lepisosteidae (gars), Amiidae (bowfins), Hiodontidae (mooneyes), Clupeidae (herrings), Fundulidae (killifishes), Atherinidae (silversides), and Elassomatidae (pygmy sunfish)
- Should the department allow the use of a site-specific pH criterion outside of the range found in the water quality standards (6.5 – 9.0 SU), the following equations may be used to derive site-specific total ammonia nitrogen acute criteria (criteria maximum concentration, CMC):
  - *Salmonids present:* $CMC = [0.275 / (1+10^{7.204-pH})] + [39.0 / (1+10^{pH-7.204})]$
  - *Salmonids absent:* $CMC = [0.411 / (1+10^{7.204-pH})] + [58.4 / (1+10^{pH-7.204})]$
- The one (1)-day Q_{10} low flow condition will be used in determining acute total ammonia nitrogen criteria [10 CSR 20-7.031(4)(B)7.A.] The one (1)-day Q_{10} may also be denoted as the "1-day Q_{10}" or "1Q10" low flow. The one (1)-day, one (1)-in-ten (10)-year low flow (1-day Q_{10}) is the lowest average flow for one (1) day that has a probable recurrence interval of once-in-ten (10) years [10 CSR 20-7.031(1)(O)4.]
- Acute criteria shall not be exceeded at any time except in those waters for which the department has allowed a zone of initial dilution [10 CSR 20-7.031(4)(B)7.A.]
- Where the department has allowed a zone of initial dilution (ZID), the maximum size of the ZID shall not exceed the width, cross-sectional area, or volume of flow allowed in regulation at the 1Q10 low flow condition [10 CSR 20-7.031(4)(A)4.B.(II)(b) and (III)(b)].
- Default 1Q10 low flow values for classified and unclassified streams are as follows:
  - Class P and P1 = 0.1 cfs
  - Class C = 0.0 cfs
  - Unclassified streams = 0.0 cfs

- Examples of acute criteria determination and applicable zone of initial dilution flows may be found in Appendix A of this document.

Chronic Criteria for Total Ammonia Nitrogen (mg N/L)

- Criteria can be found in Tables B2 & B3, 10 CSR 20-7.031 and are dependent on Early Life Stages (ELS) present or absent, temperature, and pH.
- Criteria are divided into two tables - Early Life Stages present (B3) and Early Life Stages absent (B2). Early life stages are defined as the pre-hatch embryonic period, the post-hatch free embryo or yolk-sac fry, and the larval period during which the organism feeds. Juvenile fish, which are anatomically rather similar to adults, are not considered an early life stage [10 CSR 20-7.031(1)(G)].
- Without sufficient and reliable data, it is assumed that early life stages are present and must be protected at all times of the year [10 CSR 20-7.031(4)(B)7.C.] Protocols for determining whether sufficient and reliable data exist and a format for reporting these data will be developed at a later date.
- Should the department allow the use of site-specific temperature or pH values, the following equations may be used to derive site-specific total ammonia nitrogen chronic criteria (criteria continuous concentration, CCC):
  - *ELS present:* $CCC = [0.0577 / (1+10^{7.688-pH})]+[2.487 / (1+10^{pH-7.688})] * MIN(2.85, 1.45 * 10^{0.028 * (25 - T)})$
  - *ELS absent:* $CCC = [0.0577 / (1+10^{7.688-pH})]+[2.487 / (1+10^{pH-7.688})] * 1.45 * 10^{0.028 * (25-MAX(T, 7))}$
- The thirty (30)-day Q_{10} low flow condition will be used in determining chronic total ammonia nitrogen criteria [10 CSR 20-7.031(4)(B)7.B.] The thirty (30)-day Q_{10} may also be denoted as the "30-day Q_{10}" or "30Q10" low flow. The thirty (30)-day, one (1)-in-ten (10)-year low flow (30-day Q_{10}) is the lowest average flow for thirty (30) consecutive days that has a probable recurrence interval of once-in-ten (10) years [10 CSR 20-7.031(1)(O)3.]
- Chronic criteria shall not be exceeded except in water segments for which the department has allowed a mixing zone [10 CSR 20-7.031(4)(B)7.B.]
- Where the department has allowed a mixing zone (MZ), the maximum size of the MZ shall not exceed the width, cross-sectional area, or volume of flow allowed in regulation at the 30Q10 low flow condition [10 CSR 20-7.031(4)(A)4.B.(II)(a) and (III)(a)].
- Default 30Q10 low flow values for classified and unclassified streams are as follows:
  - Class P and P1 = 1.0 cfs
  - Class C = 0.1 cfs
  - Unclassified streams = 0.0 cfs
- Examples of chronic criteria determination and applicable mixing zone dilution flows may be found in Appendix A of this document.

Establishing Reasonable Potential To Exceed Applicable Water Quality Criteria

- USEPA regulations at 40 CFR 122.44 (d)(1)(i) require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numeric water quality standard.

- Total Ammonia Nitrogen is a common constituent of domestic wastewater and may be discharged at a level that will cause or contribute to an in-stream excursion above numeric water quality criteria. The assimilative capacity of the receiving water during low-flow conditions and the level and efficiency of biological treatment at the wastewater treatment facility will determine whether or not an excursion will occur.

- A Reasonable Potential Analysis (RPA) to determine whether a discharge may cause or contribute to an excursion above applicable water quality criteria cannot be conducted without adequate data. Adequate data for conducting a total ammonia nitrogen RPA shall be a minimum of eight (8) to twelve (12) effluent samples per season for total ammonia nitrogen and a minimum of eight (8) in-stream samples per season for temperature, pH, and total ammonia nitrogen if default values are not used. In the absence of adequate data, acceptable conservative default values may be used to conduct the RPA.

- For discharges to unclassified waters and facilities with design flow less than 22,500 gpd, if adequate data are available for conducting a RPA the analysis must be conducted. If adequate data are not available, the permit should be (re)issued with a monitoring requirement for total ammonia nitrogen and the RPA performed at renewal. Permit writers have the discretion to add a reopener clause to the permit to perform the RPA sooner than renewal provided adequate data become available.

- Discharges to classified waters with limited assimilative capacity have reasonable potential to cause or contribute to an exceedance of the ammonia nitrogen chronic criterion. These facilities shall have ammonia effluent limitations after a three-year schedule of compliance that may include an interim ammonia effluent monitoring requirement. The permittee may request a reevaluation of reasonable potential at any time after the minimum data requirements have been met. Should the effluent data gathered prior to the effective date of the final ammonia limits indicate no reasonable potential exists, the permittee may submit a request for permit modification to remove the final ammonia nitrogen effluent limits.

- If the results of the RPA indicate reasonable potential exists to cause or contribute to an excursion above applicable water quality criteria, WQBELs for total ammonia nitrogen must be in the permit. Reasonable Potential Analyses should be conducted at subsequent renewal or modification to determine whether the effluent limitations are still required.

- If the results of the RPA indicate reasonable potential does not exist, a monitoring only requirement for total ammonia nitrogen must be in the permit until the next renewal. If the results of the second RPA confirm reasonable potential does not exist, the monitoring only requirement will be removed and no further RPAs will be conducted except as below.

- Methods and procedures for conducting a reasonable potential analysis shall adhere to those found in Section 3.3.2 of USEPA's "Technical Support Document For Water Quality-based Toxics Control" [EPA/505/2-90-001]. Example spreadsheets containing previous RPAs are available upon request.

- Changes in facility operation, an increase in facility design flow or loading, failure of WET Tests attributable to ammonia toxicity, changes in water quality criteria, or changes in procedures for conducting water quality reviews are all grounds for revisiting the RPA.

Effluent Limit Calculation Procedures for Total Ammonia Nitrogen

Wasteload allocations (WLAs) are calculated using water quality criteria and the dilution equation below:

$$C = \frac{(C_s * Q_s) + (C_e * Q_e)}{(Q_e + Q_s)}$$ (EPA/505/2-90-001, Section 4.5.5)

Where C = downstream concentration
C_s = upstream concentration
Q_s = upstream flow (cfs)
C_e = effluent concentration
Q_e = effluent flow (cfs)

Chronic wasteload allocations are determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations are determined using applicable acute water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations are calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" [EPA/505/2-90-001, also known as "TSD"] and "1999 Update of Ambient Water Quality Criteria for Ammonia" [64 FR 71974, December 22, 1999].

- For the purpose of developing seasonal WQBELs for total ammonia nitrogen, the summer season shall consist of the months May – October (inclusive) and the winter season shall consist of the months November – April (inclusive).

- Total ammonia nitrogen criteria shall be based on the ambient mean temperature and pH of the receiving water. In the absence of site-specific temperature and pH data, default values of 26 ^{o}C and 6 ^{o}C for the summer and winter seasons, respectively, at a pH = 7.8 SU should be used.

- Wasteload allocations calculated using the dilution equation above or determined from a water quality model are converted to long term average (LTA) concentrations using the following equations:

Acute Long Term Average: $LTA_a = WLA_a * e^{\wedge}[0.5\sigma^2 - z\sigma]$

where $\sigma^2 = \ln(CV^2 + 1)$, z = 2.326 for 99th percentile

Chronic Long Term Average: $LTA_c = WLA_c * e^{\wedge} [0.5\sigma^2_{30} - z\sigma_{30}]$

where $\sigma^2_{30} = \ln(CV^2/30 + 1)$, z = 2.326 for 99th percentile

If sufficient effluent monitoring data are available, the coefficient of variation (CV) can be calculated as follows: CV = Standard Deviation/Mean. For the default coefficient of variation value of 0.6 [TSD, Section 5.5.2], LTA_a multiplier = 0.321 and LTA_c multiplier = 0.780

- A comparison of the LTA_a and LTA_c is performed and the lower, more limiting long term average (LTA_{MIN}) selected.
- The LTA_{MIN} value is then used to calculate maximum daily and average monthly effluent limitations for total ammonia nitrogen using the following equations:

Maximum Daily Limit: $MDL = LTA_{MIN} * e^{\wedge} [z\sigma - 0.5\sigma^2]$

where $\sigma^2 = \ln(CV^2 + 1)$, z = 2.326 for 99th percentile

Average Monthly Limit: $AML = LTA_{MIN} * e^{\wedge} [z\sigma_4 - 0.5\sigma^2_4]$

where $\sigma^2_4 = \ln(CV^2/4 + 1)$, z = 1.645 for 95th percentile

If sufficient effluent monitoring data are available, the coefficient of variation (CV) can be calculated as follows: CV = Standard Deviation/Mean. For the default coefficient of variation value of 0.6 [TSD, Section 5.5.2], MDL multiplier = 3.11 and AML multiplier = 1.55

Appendix A.

Example: A new facility discharges domestic wastewater to an unclassified, unnamed tributary of Clear Creek (WBID: 2144) in Washington County; design flow for the facility is 80,000 gpd (0.124 cfs). Default pH and temperature values apply; background ammonia = 0.01 mg/L.

	Flow (cfs)	MZ (cfs)	ZID (cfs)
7Q10	0.0	0.0	0.0
1Q10	0.0	0.0	0.0
30Q10	0.0	0.0	N/A

Applicable mixing zone regulation: 10 CSR 20-7.031(4)(A)4.B.(I)

Summer (CCC = 1.5 mg/L, CMC = 12.1 mg/L)

Chronic WLA: $C_e = (0.124 + 0.0)1.5 – (0.0 * 0.01)/0.124$
$C_e = 1.5$ mg/L

Acute WLA: $C_e = (0.124 + 0.0)12.1 – (0.0 * 0.01)/0.124$
$C_e = 12.1$ mg/L

$LTA_c = 1.5$ mg/L (0.780) = 1.2 mg/L [CV = 0.6, 99th Percentile, n = 30]
$LTA_a = 12.1$ mg/L (0.321) = 3.9 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c and LTA_a (LTA_{MIN})

MDL = 1.2 mg/L (3.11) = 3.7 mg/L [CV = 0.6, 99th Percentile]
AML = 1.2 mg/L (1.55) = 1.9 mg/L [CV = 0.6, 95th Percentile, n = 4]

Winter (CCC = 3.1 mg/L, CMC = 12.1 mg/L)

Chronic WLA: $C_e = (0.124 + 0.0)3.1 – (0.0 * 0.01)/0.124$
$C_e = 3.1$ mg/L

Acute WLA: $C_e = (0.124 + 0.0)12.1 – (0.0 * 0.01)/0.124$
$C_e = 12.1$ mg/L

$LTA_c = 3.1$ mg/L (0.780) = 2.4 mg/L [CV = 0.6, 99th Percentile, n = 30]
$LTA_a = 12.1$ mg/L (0.321) = 3.9 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c and LTA_a (LTA_{MIN})

MDL = 2.4 mg/L (3.11) = 7.5 mg/L [CV = 0.6, 99th Percentile]
AML = 2.4 mg/L (1.55) = 3.7 mg/L [CV = 0.6, 95th Percentile, n = 4]

Season	Maximum Daily Limit	Average Monthly Limit
Summer	3.7	1.9
Winter	7.5	3.7

Appendix A (cont).

Example: A POTW discharges to North Fork White River (WBID: 2498), a cold-water fishery in Ozark county; design flow for the facility is 1.5 MGD (2.33 cfs). Site-specific water quality data for pH (8.0 SU) and temperature (Summer – 18.2 ^{o}C, Winter – 10.6 ^{o}C) will be used; background ammonia nitrogen = 0.025 mg/L. Daily streamflow data for the North Fork White River near Tecumseh (USGS-07057500) were used to generate 7Q10, 1Q10, and 30Q10 low-flow values.

	Flow (cfs)	MZ (cfs)	ZID (cfs)
7Q10	234.5	58.6	5.9
1Q10	230.4	57.6	5.8
30Q10	243.0	60.8	N/A

Applicable mixing zone regulation: 10 CSR 20-7.031(4)(A)4.B.(III)

Summer (CCC = 1.9 mg/L, CMC = 5.6 mg/L)

Chronic WLA: $C_e = (2.33 + 60.8)1.9 – (60.8 * 0.025)/2.33$
$C_e = 50.8$ mg/L

Acute WLA: $C_e = (2.33 + 5.8)5.6 – (5.8 * 0.025)/2.33$
$C_e = 19.5$ mg/L

$LTA_c = 50.8$ mg/L (0.780) = 39.6 mg/L [CV = 0.6, 99th Percentile, n = 30]
$LTA_a = 19.5$ mg/L (0.321) = 6.3 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c and LTA_a (LTA_{MIN})

MDL = 6.3 mg/L (3.11) = 19.6 mg/L [CV = 0.6, 99th Percentile]
AML = 6.3 mg/L (1.55) = 9.8 mg/L [CV = 0.6, 95th Percentile, n = 4]

Winter (CCC = 2.4 mg/L, CMC = 5.6 mg/L)

Chronic WLA: $C_e = (2.33 + 60.8)2.4 – (60.8 * 0.025)/2.33$
$C_e = 64.4$ mg/L

Acute WLA: $C_e = (2.33 + 5.8)5.6 – (5.8 * 0.025)/2.33$
$C_e = 19.5$ mg/L

$LTA_c = 64.4$ mg/L (0.780) = 50.2 mg/L [CV = 0.6, 99th Percentile, n = 30]
$LTA_a = 19.5$ mg/L (0.321) = 6.3 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c and LTA_a (LTA_{MIN})

MDL = 6.3 mg/L (3.11) = 19.6 mg/L [CV = 0.6, 99th Percentile]
AML = 6.3 mg/L (1.55) = 9.8 mg/L [CV = 0.6, 95th Percentile, n = 4]

Season	Maximum Daily Limit	Average Monthly Limit
Summer	19.6	9.8
Winter	19.6	9.8

Appendix A (cont).

Example: A private, domestic facility discharges to the Class P segment of Little Tarkio Creek (WBID: 0248) in Holt County; design flow for the facility is 125,000 gpd (0.194 cfs). Default pH and temperature values apply, background ammonia = 0.01 mg/L.

	Flow (cfs)	MZ (cfs)	ZID (cfs)
7Q10	0.1	0.025	0.0025
1Q10	0.1	0.025	0.0025
30Q10	1.0	0.25	0.025

Applicable mixing zone regulation: 10 CSR 20-7.031(4)(A)4.B.(II)

Summer (CCC = 1.5 mg/L, CMC = 12.1 mg/L)

Chronic WLA: $C_e = (0.194 + 0.25)1.5 – (0.25 * 0.01)/0.194$
$C_e = 3.4$ mg/L

Acute WLA: $C_e = (0.194 + 0.0025)12.1 – (0.0025 * 0.01)/0.194$
$C_e = 12.3$ mg/L

$LTA_c = 3.4$ mg/L (0.780) = 2.7 mg/L [CV = 0.6, 99th Percentile, n = 30]
$LTA_a = 12.3$ mg/L (0.321) = 3.9 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c and LTA_a (LTA_{MIN})

MDL = 2.7 mg/L (3.11) = 8.4 mg/L [CV = 0.6, 99th Percentile]
AML = 2.7 mg/L (1.55) = 4.2 mg/L [CV = 0.6, 95th Percentile, n = 4]

Winter (CCC = 3.1 mg/L, CMC = 12.1 mg/L)

Chronic WLA: $C_e = (0.194 + 0.25)3.1 – (0.25 * 0.01)/0.194$
$C_e = 7.1$ mg/L

Acute WLA: $C_e = (0.194 + 0.0025)12.1 – (0.0025 * 0.01)/0.194$
$C_e = 12.3$ mg/L

$LTA_c = 7.1$ mg/L (0.780) = 5.5 mg/L [CV = 0.6, 99th Percentile, n = 30]
$LTA_a = 12.3$ mg/L (0.321) = 3.9 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c and LTA_a (LTA_{MIN})

MDL = 3.9 mg/L (3.11) = 12.1 mg/L [CV = 0.6, 99th Percentile]
AML = 3.9 mg/L (1.55) = 6.0 mg/L [CV = 0.6, 95th Percentile, n = 4]

Season	Maximum Daily Limit	Average Monthly Limit
Summer	8.4	4.2
Winter	12.1	6.0

Appendix A (cont).

Example: A small, municipal facility discharges to Shoal Creek (WBID: 0650), a Class C stream in Putnam County; design flow is 30,000 gpd (0.0465 cfs). Site-specific water quality data for pH (8.0 SU) and temperature (Summer – 18.2 ^{o}C, Winter – 10.6 ^{o}C) will be used; background ammonia = 0.025 mg/L.

	Flow (cfs)	MZ (cfs)	ZID (cfs)
7Q10	0.0	0.0	0.0
1Q10	0.0	0.0	0.0
30Q10	0.0	0.0	N/A

Applicable mixing zone regulation: 10 CSR 20-7.031(4)(A)4.B.(I)

Summer (CCC = 1.5 mg/L, CMC = 8.4 mg/L)

Chronic WLA: $C_e = (0.0465 + 0.0)1.5 – (0.0 * 0.025)/0.0465$
$C_e = 1.5$ mg/L

Acute WLA: $C_e = (0.0465 + 0.0)8.4 – (0.0 * 0.025)/0.0465$
$C_e = 8.4$ mg/L

$LTA_c = 1.5$ mg/L (0.780) = 1.2 mg/L [CV = 0.6, 99th Percentile, n = 30]
$LTA_a = 8.4$ mg/L (0.321) = 2.7 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c and LTA_a (LTA_{MIN})

MDL = 1.2 mg/L (3.11) = 3.7 mg/L [CV = 0.6, 99th Percentile]
AML = 2.7 mg/L (1.55) = 1.9 mg/L [CV = 0.6, 95th Percentile, n = 4]

Winter (CCC = 3.1 mg/L, CMC = 8.4 mg/L)

Chronic WLA: $C_e = (0.0465 + 0.0)3.1 – (0.0 * 0.025)/0.0465$
$C_e = 3.1$ mg/L

Acute WLA: $C_e = (0.0465 + 0.0)8.4 – (0.0 * 0.025)/0.0465$
$C_e = 8.4$ mg/L

$LTA_c = 3.1$ mg/L (0.780) = 2.4 mg/L [CV = 0.6, 99th Percentile, n = 30]
$LTA_a = 8.4$ mg/L (0.321) = 2.7 mg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c and LTA_a (LTA_{MIN})

MDL = 2.4 mg/L (3.11) = 7.5 mg/L [CV = 0.6, 99th Percentile]
AML = 2.4 mg/L (1.55) = 3.7 mg/L [CV = 0.6, 95th Percentile, n = 4]

Mixing zones are not allowed for Class C streams [10 CSR 20-7.031(4)(A)4.B.(I)] and chronic criteria must be met at all times in the classified waterbody [10 CSR 20-7.031(4)(B)7.B.] The effluent limits below are applicable for discharges with monitoring frequency of at least twice/month. For facilities with less frequent monitoring, the maximum daily and average monthly limits will set at the chronic criteria (MDL = AML = CCC).

Season	Maximum Daily Limit	Average Monthly Limit
Summer	3.7	1.5
Winter	7.5	3.1